

State Environmental Quality Review (SEQR)
FINDINGS STATEMENT
July 19, 2011

Pursuant to Article 8 State Environmental Quality Review Act (SEQRA) of the Environmental Conservation Law and 6 NYCRR Part 617, the NYS Department of Environmental Conservation (DEC), as Lead Agency, makes the following findings:

Name of Action: Lafarge Ravena Plant Modernization, Town of Coeymans, Albany County, New York

Location: US Route 9W, Ravena, New York 12143

Project Sponsor: Lafarge Building Materials, Inc.

Description of the Action:

Lafarge Building Materials, Inc. (Lafarge) proposes to modernize and expand its existing cement manufacturing facility in the Town of Coeymans in Albany County by replacing the existing “wet” cement-making process with a more energy efficient “dry” cement-making process. The investment in the facility upgrades will be several hundred million dollars, and the facility will employ approximately 180 people.

The proposal involves replacing two existing long “wet” kilns with a preheater/precalciner tower structure no more than 526 feet in height, and the replacement or upgrade of the cement grinding mills. The preheater/precalciner tower will replace the existing 325-foot stack that will be removed and it will be partially-enclosed to mitigate visual impacts. The facility’s capacity will increase from approximately 1.72 million to 2.81 million short tons of clinker per year. (Clinker is the solid material produced by the cement kiln or preheater tower that is ground and mixed with gypsum to form cement.) Overall electrical use and greenhouse gas emissions will increase due to a 61% increase in production but fuel use will decrease due to greater energy efficiency. The fuel use, electrical demand and greenhouse gas emissions will decrease per ton of clinker produced. The proposal will increase carbon monoxide emissions while other emissions will decrease or remain relatively constant. The facility is subject to National Emission Standards for Hazardous Air Pollutants and Standards of Performance for Portland Cement Plants pursuant to federal regulations under 40 CFR Parts 63 and 60 respectively, that will require a reduction in total mercury emissions. Effluent discharges will be eliminated altogether, and water use will decrease for the modernized facility.

Lafarge also owns and operates a limestone mine and a wharf on the Hudson River. No permit modifications are proposed for the mining operation or the shipping wharf. The proposal requires modifications to the Air Title V Permit and modifications to the State Pollution Discharge Elimination System (SPDES) Permit.

The Lafarge facility is located approximately one mile west of the Hudson River, east of U.S. Route 9W, south of Old Ravena Road, and north of the Village of Ravena, in the Town of Coeymans, Albany County, New York. The facility is approximately 2.25 miles north of the intersection of NYS Route 143 and Route 9W.

Summary of Major Project Elements:

- Installation of a new secondary crusher;
- Installation of a new preblending system;
- Installation of new raw mill storage bins;
- Replacement of the two existing wet kilns, associated kiln drives and clinker coolers with a single dry preheater/precalciner kiln system and related equipment, including:
 - A preheater/precalciner tower;
 - A dry process kiln and associated kiln drives;
 - A new clinker cooler system;
 - A new kiln particulate matter emissions control system;
 - A new raw mill and coal mill;
 - An alkali bypass system; and
 - A new stack;
- Decommissioning and replacement of most of the existing mills, including two raw (horizontal rod) mills, two finish (horizontal ball) mills, and two coal (bowl) mills;
- Installation of a new scrubber and dewatering system;
- Decommissioning of slurry basins;
- Installation of a new Selective Non Catalytic Reduction (SNCR) air pollution control system;
- Installation of new clinker storage silos;
- Installation of new finish mill additive storage bins;
- Installation of a new waste heat recovery/power generation (cogeneration) station and associated cooling towers;
- Replacement and upgrade of certain conveyor systems;
- Replacement and upgrade of certain air handling equipment; and
- Replacement and upgrade of certain material transfer equipment.

Agency Jurisdictions:

Title V Facility Permit, 6NYCRR201

State Pollutant Discharge Elimination System, 6NYCRR750

State Environmental Quality Review Act, 6NYCRR617

State Environmental Quality Review (SEQR) Process Chronology:

July 9, 2008	Environmental Assessment Form submitted to DEC
July 11, 2008	Lead Agency Coordination
August 21, 2008	DEC established as Lead Agency and Positive Declaration issued
October 6, 2008	Public Notice for Draft Scope
October 29, 2008	Public Scoping Session held
February 2, 2009	Final Scope accepted
November 22, 2010	Combined Notice of Completion of Draft Environmental Impact Statement (DEIS), Notice of Complete Application, Notice of Public Information Meeting, Notice of Legislative Public Comment Hearing
December 8, 2010	Public Information Session held
January 13, 2011	Supplemental Notice of Complete Application (for PSD permit)
January 20, 2011	Legislative Public Comment Hearing

July 7, 2011
July 7, 2011

Response to Comments
Final Environmental Impact Statement (FEIS) accepted

Principal documents related to this SEQR review have been made available on the DEC website at: <http://www.dec.ny.gov/permits/70477.html> and the Lafarge website at LafargeRavenaFacts.com.

DEC is required to consider the relevant environmental impacts, facts and conclusions disclosed in the final EIS in its SEQR Findings statement. Under Environmental Conservation Law section 8-109, DEC is required to choose alternative which, consistent with social, economic and other essential considerations, to the maximum extent practicable, minimize or avoid adverse environmental effects, including effects revealed in the environmental impact statement process.

Summary of the Department's Findings:

The Department is approving the issuance of modification of the State Pollution Discharge Elimination System (SPDES) and Title V Facility Permits including conditions under SEQR incorporated into the Title V Permit. The Department's approval:

- 1) authorizes the permittee to construct and operate a modernized, expanded cement manufacturing facility increasing clinker production from 1.72 million tons/year to 2.81 MTY at the location of the existing cement manufacturing facility in accordance with all applicable regulatory requirements under Title V Air Facility, State Pollutant Elimination Discharge System, and State Environmental Quality Review and consistent with the major project elements listed above;
- 2) requires the permittee to install two PM₁₀/PM_{2.5} monitors;
- 3) requires the permittee to install and operate a new 6 megawatt (MW) waste heat recovery cogeneration unit;
- 4) requires the permittee to enclose the limestone raw material pile;
- 5) requires the permittee to prepare a draft habitat management plan for the undeveloped areas of the project site;
- 6) requires the permittee to prepare and submit to the Department for review and approval, a draft protocol for monitoring bird and bat strikes on the exhaust stack during the first spring and fall migration period following construction of the preheater/precalciner tower;
- 7) requires the permittee to prepare and submit a landscaping plan;
- 8) requires the permittee to adhere to a stack demolition schedule for the removal of the existing stack;
- 9) and requires the permittee to construct the pre-heater/pre-calciner structure in accordance with the "Partially Enclosed Tower/Stack Structure" as represented in the FEIS.

The Department's Findings and permit approvals are based on the following considerations:

- Air Quality - As discussed in more detail in the Air Quality section below, the facility modernization will result in the reduction in the rates of most air pollutant emissions and will reduce air quality impacts. The modernized facility includes air pollution control measures for particulate matter, sulfur dioxide (SO₂), nitrogen oxides (NO_x), volatile organic compounds (VOCs), mercury, and carbon monoxide to assure compliance with all EPA and DEC emission limits. The modernization will comply with all state and federal regulations and requirements, including the recently promulgated more stringent emission standards and requirements for

mercury, SO₂, NO_x, and particulate matter. The proposed project will conform to all regulatory requirements and limits, which are protective of human health.

- **Energy Use** - The facility modernization to a dry manufacturing process will result in a more energy-efficient operation reducing both the rates of electrical and fuel use per short ton of clinker produced. Fuel use will be reduced approximately 40% per short ton of clinker produced, and reduced by 3% overall when you account for the increase in clinker production. As covered in the FEIS without the modernization project, meeting the future product demands of the region would result in an additional overall increase in fuel use from the fuel use associated with shipping from imports.

The incorporation of waste heat recovery technologies will meet approximately 17% of the plant's off-site electricity demand, and net electrical usage will be reduced by approximately 20% per short ton of clinker produced. These measures coupled with the dry manufacturing process all provide the means to keep the increase in electrical usage by only 21% overall. This is a significant energy savings particularly when compared to the 61% increase in clinker production from 1.72 million tons per year (MTY) to 2.81 MTY.

- **Economic Viability and Sustainability** - The modernization to a dry manufacturing process is deemed necessary to maintain economic viability and sustainability of the Lafarge facility in order to compete with foreign imports and for the facility and to be able to fulfill the infrastructure and overall construction needs of the region, resulting in a significant economic benefit for the region. The existing Lafarge manufacturing facility provides Portland cement to the Eastern Seaboard from New Hampshire to North Carolina. Lafarge cement is used in concrete, mortar and grout, and supports construction projects throughout these areas. The existing facility manufactures cement by using a process that evaporates water from a water-limestone mixture, which requires considerable energy and heat. The existing "wet process" is outdated and inefficient in terms of fuel and energy use, making it costly in terms of manufacturing operations. The modernized facility will decrease the cost of production in order to maintain the plant's economic viability and sustainability. Production capacity will be increased by 61% in order to meet cement product demand through this local production facility rather than solely through imported cement. Furthermore, construction of the new facility will create up to 800 short-term construction jobs and preserve 180 permanent manufacturing jobs important to the local economy.
- **Greenhouse Gases** - The facility modernization to a dry manufacturing process will result in an overall reduction as well as of the rate of greenhouse gas emissions (GHG) per ton of clinker produced compared to the existing facility. In addition, meeting the demand for cement from imports would account for an increase in greenhouse gas emissions per ton of clinker produced from 0.96 short tons of CO_{2-e} per year in the future with the proposed modernization to 1.10 short tons of CO_{2-e} per year in the future without the proposed modernization, which is mainly due to emissions resulting from long distance transport. Further reductions in greenhouse gas emissions are achieved by the incorporation of a waste heat recovery facility.
- **Surface Water** - The facility modernization will eliminate all existing process and cooling water discharges, thereby minimizing water quality and thermal impacts to surface waters. The new

facility will recycle its cooling tower blowdown, and the existing truck wash station will be converted to a recycled or air vacuum system that will not discharge to surface water.

- Stormwater - A preliminary SWPPP has been prepared for the site that meets all standards for treatment and will be finalized and approved by the Department prior to disturbance. Stormwater outfalls are incorporated into the SPDES permit and will meet discharge limits set within the permit conditions.
- Hudson River Water Withdrawal - Water withdrawals from the Hudson River will provide supplemental flow for cooling and process water needs, with water withdrawal rates being limited to what is needed to supplement the primary sources of quarry water and groundwater. The modernized facility will continue to use the existing intake structure to withdraw up to 2 MGD of Hudson River water only in the event that quarry and well water volume is insufficient. Intake capacity will decrease from 8 MGD to 2 MGD, a 75% reduction. The reduction in river water usage compared to the current facility will be realized through the use of a closed-cycle cooling system and an increase in quarry and well water supply. As such, fisheries impacts due to the entrainment of aquatic life will be decreased. Further fisheries impacts will be decreased by the installation of 0.5 mm wedge-wire screens which will reduce entrainment by an estimated additional 90% bringing the total estimated reduction in entrainment to more than 97%.
- Visual Impacts - Modern technology choices which are necessary in order to achieve high energy-efficiency and low emissions dictate a larger and taller, more visible tower structure (preheater/precalciner) which is consistent with the existing Lafarge site that is industrial in character and includes an existing tall stack. The larger and taller stack structure was analyzed with alternatives developed to mitigate and soften its industrial character resulting in the preferred Partially Enclosed Tower/Stack Structure. This assessment in the FEIS allows for the Department to conclude that the new tower will increase the visibility of the Lafarge facility only from limited areas including one spot along the Hudson River south of the Lafarge docks in the vicinity of Coeymans Landing, the adjacent Ravena Coeymans School, and the NYS Thruway. However, after weighing and balancing relevant environmental impacts with social, economic and other considerations that define the need for this project from among the reasonable alternatives this project is one that, based upon this balance, will avoid, minimize or mitigate the visual impacts from the installation of the preheater/precalciner tower to the maximum extent practicable by tower design elements and lighting modifications as described below. Facility landscaping will further mitigate industrial aspects of the site as a whole, and a visual offset for the tower will be required by removing the existing stack from the landscape as discussed below.
- Tower Design Permit Condition - A permit condition requires that the permittee shall construct the pre-heater/pre-calciner structure in accordance with the "Partially Enclosed Tower/Stack Structure" as represented in the FEIS (see Chapters 9 and 25) and depicted graphically in Figure 25-7 and the cover of the FEIS. The "Partially Enclosed Tower/Stack Structure" will reduce the visual presence of the facility during nighttime hours by reducing the visibility of workforce lighting due to partial enclosure. The partially-enclosed design will minimize bird/bat strikes by limiting the open structure design, which has been shown to contribute to bird mortality, and by reducing and redirecting the workforce lighting.

- **Stack Removal Permit Condition** - A permit condition requires removal of the existing stack at the facility, which will mitigate visual impacts by providing an offset to the new preheater/precalciner tower and mitigate potential impacts to birds and bats from potential strikes on the existing tower.
- **Bird Strikes** - Potential impacts to birds/bats from tower strikes will be minimized by several measures such as directing the lighting downward, and the lighting which is accessed infrequently will be operated only on an as-needed basis. In addition, the tower structure does not include windows or other reflective surfaces, and does not require the use of guy wires, both of which are known to increase the potential for bird/bat strikes. The tower design incorporates features conforming to United States Fish and Wildlife's *Interim Guidelines for Recommendations on Communication Tower Siting, Construction, Operation, and Decommissioning*, which includes the recommendation to remove the existing stack at the site. This will reduce the potential for bird/bat strikes at that location with one less structure for birds/bats to navigate around after the tower is built. Impacts to birds/bats from the tower will be mitigated to the extent practicable by tower design elements, lighting modifications, and existing stack removal.
- **Bird/Bat Strike Monitoring Permit Condition** - A permit condition requires development of a protocol for monitoring potential bird and bat strikes on the preheater/precalciner tower during the first spring and fall migration period following construction of the tower in order to assess if such strikes will occur on the larger structure and to recommend follow-up measures as necessary including implementation of additional practicable measures to reduce mortality to the maximum extent practicable should bat or bird mortality be recorded during the monitoring period.
- **NAAQS Particulate Monitoring Permit Condition** - A permit condition requires the installation and operation of two PM₁₀/PM_{2.5} monitors for one year near the Ravena Plant site; one monitor shall be installed and operated at the northwestern edge of the Ravena Plant site, and one shall be installed and operated at the Ravena-Coeymans-Selkirk High School. Monitoring is being required to demonstrate compliance with the National Ambient Air Quality Standards (NAAQS).
- **Waste Heat Recovery Permit Condition** - A permit condition requires the installation and operation of a new 6 megawatt (MW) waste heat recovery cogeneration unit. The waste heat recovery cogeneration unit will supply a portion of the required electricity for the modernized plant by recovering heat from the preheater tower and clinker cooler.
- **Enclose Raw Material Pile Permit Condition** - A permit condition requires the enclosure of the limestone raw material pile a necessary clinker production ingredient in order to minimize fugitive dust particulate matter which can result from high winds hitting exposed piles.
- **Habitat Management Plan Permit Condition** - A permit condition requires the development of a habitat management plan for the undeveloped areas of the project site in order to maintain and enhance these areas for the benefit of wildlife.

- Landscaping Plan Permit Condition - A permit condition requires the development of a landscaping plan with the goal of providing visual enhancements and screening that minimize the industrial character of the facility.
- Adherence to Project Schedule Permit Condition - A permit condition requires that the permittee adhere to the project schedule as submitted in the FEIS. The schedule ensures that the permittee proceed with the authorized project elements in a timely manner, including the stack removal and the construction of the waste heat recovery facility. A deviation from the project schedule requires prior approval by the Department.
- Permanent unavoidable impacts are limited to the preheater/precalciner tower replacing the existing stack and its larger more visible structure from, for example the Hudson River, adjacent school, and NYS Thruway, and the larger and taller tower structure which presents potential impacts to natural resources from bat/bird strikes. As discussed above, weighing and balancing is coupled with visual resource impacts being mitigated to the maximum extent practicable through the energy-efficient less-polluting Partially Enclosed Tower/Stack Structure design, while bird impacts have been mitigated by tower design elements, lighting modifications, and existing stack removal with monitoring required and follow-up for additional mitigation if mortality is found to occur.
- The Department has, after an EIS scoping process, review of complete permit application submittals and a draft EIS, an extensive public review process including a legislative public hearing, review of and responses prepared to public comments received and the review of a final EIS, determined that under the provisions of 6NYCRR 621.8 (b) no substantive or significant issues have been raised warranting an adjudicatory public hearing and all statutory and regulatory criteria and standards for approval and permit issuance have been met.
- The facility has been designed to meet all federal and state environmental standards protective of human health and the environment as well as to conserve on site natural resources.
- The impacts of the Lafarge Modernization have been fully examined and after weighing and balancing relevant environmental impacts with social, economic and other considerations that define the need for this project from among the reasonable alternatives, this action is one that avoids or minimizes adverse environmental impacts to the maximum extent practicable. Identified adverse environmental impacts will be avoided or minimized to the maximum extent practicable by incorporating, as conditions to the permit, mitigative measures that were identified as practicable.

Fact and Conclusions in the EIS and Supporting Documents Relied Upon to Support the Issuance of the Modernization Permit

Issues

Regulatory Standards

The Department finds that the modernized facility engineering and design meet all applicable regulatory standards including Air Title V, SPDES, SEQR and federal air quality and water discharge requirements.

Air Quality

The Lafarge Modernization project is subject to a Title V air permit pursuant to 6NYCRR201 for air emissions, and includes a number of New York State and Federal air quality regulations and guidelines, including review under Federal Prevention of Significant Deterioration (PSD, 40 CFR 52.21), New York State PSD and Non-Attainment New Source Review (PSD/NNSR, 6 NYCRR Part 231), National Emission Standards for Hazardous Air Pollutants (NESHAPS, 40 CFR Part 63), NYSDEC Guidelines for Control of Toxic Ambient Air Contaminants (TAACs, 6 NYCRR Part 212), and New Source Performance Standards (NSPS) pursuant to 40 CRR Part 60 (Subpart F - Portland Cement Plants, Subpart Y - Coal Prep Plants, and Subpart OOO - Non-metallic Mineral Processing Plants). The Department has concluded that the emissions from the facility will meet state and federal regulatory air quality standards which are protective of human health and the environment, and that the modernization of the current cement manufacturing facility will result in most air pollutants decreasing or remaining relatively unchanged, with the exception of Carbon monoxide (CO). CO emissions will increase by 263% with the modernized facility with a production increase of 61%, which meets all federal and state standards. Additional increases include an increase in lead by 56%, an increase in volatile organic compounds (VOC) by 18%, and an increase in Carbon dioxide by 43%, all of which represent a decrease in pollution per ton of clinker produced with the modernized facility which is increasing production by 61%.

As part of the permitting process, air quality assessments were conducted which included assessments that evaluated both long-term (operating-related) effects and short-term (construction-related) effects.

Air Quality Assessments:

PSD and NNSR Requirements: Assessments were done to determine whether the “net” change in air pollutant emissions that will occur with the modernization project would exceed established “Significant Net Emissions Increase Threshold” level when compared to existing “baseline” air pollutant emission levels. Results of the net emission increase analysis showed that CO is the only PSD-regulated pollutant with emissions increasing reaching the Significant Net Emissions Increase Threshold, and required further PSD analysis. In addition, a Best Available Control Technology (BACT) analysis was required due to the increase in CO emissions.

The ambient air quality dispersion modeling analysis determined that the net increase in CO emissions would not result in an exceedence of established Significant Impact Levels (SILs) for CO and that in fact, the estimated increases in ambient concentrations of CO were well below the CO SILs. Emission estimates considered all “fugitive” particulate matter sources, including process emissions, fugitive

emissions from paved and unpaved roads, and raw material storage piles and condensable particulate matter released from the kiln stack.

The FEIS Table 20-8 *Net Changes in Emissions with the Proposed Project Between August 2004-July 2006 Baseline Levels* summarizes the results of the net emission increase analysis, and indicates that the modernization will not result in any significant net increase in emissions for any PSD-regulated pollutant except CO.

BACT Analysis Requirement: Since the increase in CO emissions would exceed established Significant Net Emission Increase Thresholds, the project must incorporate BACT to control the CO emissions. A range of control technologies was considered and the result of the assessments was that “good combustion practices” are the best technology to meet an emission limit of 2.50 lb/ton of clinker, on a 30-day rolling average as determined by a Continuous Emissions Monitoring Systems (CEMS).

NAAQS Compliance Demonstration and Assessments: Although not required per state or federal regulations, the Department required that either a comprehensive NAAQS compliance demonstration for PM₁₀ and PM_{2.5} be completed through air dispersion modeling, or that post construction air pollutant monitoring be instituted to demonstrate compliance with the NAAQS once the modernization is in operation. As such, Lafarge has committed to the installation of two ambient air quality monitors that will monitor ambient levels of PM₁₀ and PM_{2.5}. One monitor would be installed at the northwestern edge of the Ravena Plant site and one, at the Ravena-Coeymans-Selkirk High School.

Additional modeling was conducted to respond to newly promulgated 1-hour NAAQS from EPA for SO₂ and NO₂. The modeling report is provided in Appendix K of the FEIS and concluded that the new facility would contribute less than 25% to the standard for either pollutant at the maximum receptor site.

The FEIS Table 20-1 *National Ambient Air Quality Standards* summarizes the ambient air quality standards, which have been established on the basis of health and welfare criteria, for ‘criteria’ pollutants. The FEIS Table 20-6 *Average Yearly Plantwide Emissions of PSD Regulated Pollutants for the August 2004 – July 2006 Baseline Period* summarizes the total emissions (by major source) at the Ravena Plant, including from the kiln system, clinker coolers and a number of other industrial point sources, as well as fugitive emissions from process equipment, storage piles and quarry operations.

Environmental Justice Requirements/Assessment: An assessment of the impact of the project on air quality on Potential Environmental Justice (PEJ) areas was completed along with an assessment of ambient concentrations of air pollutants at local schools. The assessments concluded that the modernization would not result in any significant adverse impact at any PEJ area or school, and also would not result in any disproportionate air quality impacts at these locations. Results of these assessments are shown in Table 20-12 *CO levels at PEJs and Public Schools with the Proposed Project at Full Load* and Table 20-13 *Changes in PM10, PM2.5, SO2 and NOx Concentrations at PEJ Areas and Public Schools in the Vicinity of the Proposed Project* of the FEIS.

Guideline for Control of Toxic Ambient Air Contaminants (TAACs): Lafarge has demonstrated that the action will not contravene established Annual Guideline Concentrations (AGC) and Short-term Guideline Concentrations (SGC) as identified in NYSDEC Policy DAR-1: Guidelines for the Control of Toxic Ambient Air Contaminants (TAACS), as referenced in the FEIS Table 20-14 *Maximum Estimated*

TAAC Concentrations with the Proposed Project at Full Load. The highest concentration of TAAC from the modernization would be less than 21% of the AGC and SGC according to NYSDEC Policy DAR-1 and most concentrations being less than 1.0%. The concentrations for mercury would be less than 0.1% of the AGC and SGC according to the NYSDEC Policy DAR-1: Guidelines for the Control of Toxic Ambient Air Contaminants (TAACS).

New Source Performance Standards (NSPS): Lafarge has demonstrated that the modernized facility will meet NSPS that have been established for a number of individual industrial or source categories, including Portland Cement Plants under (40 CFR Part 60 Subparts F, Y, and OOO) and will meet the amendments to Subpart F that include the new limits for NO_x and SO₂ and that requires particulate matter continuous emission monitoring systems (CEMS) for kilns and clinker coolers to demonstrate compliance with the particulate matter limits.

National Emission Standards for Hazardous Air Pollutants (NESHAPS): Lafarge has demonstrated that the modernization project will comply with all NESHAP limits upon startup of the new equipment and will demonstrate compliance with the limits by using Continuous Emission Monitoring Systems (CEMS) for PM, HCl, THC and Hg emissions. Revised limits for mercury decrease from 55 lbs to 21 lbs per million tons of clinker for 30-day rolling average, which is a reduction in allowable emissions of mercury by approximately 66% from 176 lb/yr for the current plant to a maximum of 59 lb/yr for the new plant. NESHAP specifies emissions monitor performance standards and QA/QC procedures to ensure that emissions monitoring data are accurate and complete. Summaries of the in-stack emissions monitoring will be made available for public review. Therefore, the new facility will meet the NESHAP requirements, which have been developed to protect public health and the environment.

Mobile Source Impact Assessment: Since the operation of the facility will not require additional employees or an increase in transportation needs, the modernization would not result in any change in mobile source-related emissions or ambient air quality levels.

Requirements of the air permit include the emission limits required by USEPA and NYSDEC. In order to assure compliance with the emission limits, a number of air pollution control measures have been incorporated into the design and operation of the plant including:

- Particulate Matter Controls to achieve emission limit for combined kiln and clinker cooler of 0.01 lb/ton of clinker at main stack. Controls will include using fabric filters and scrubbers. Fabric filters will also be used to control PM emissions from other process sources such as the raw material, clinker and cement handling and transfer and finish mills. Particulate matter is also controlled by the development of measures to control fugitive dust and airborne dust emissions from all major potential sources at the Ravena Plant including fugitive dust and airborne dust emissions from material conveyors and transfer points, material storage piles, paved roads, unpaved roads, material loading, and material unloading activities at the cement manufacturing facility (see subsequent discussion of fugitive dust).
- Sulfur Dioxide Controls to achieve emission limit for the kiln system of 0.4 lb/ton of clinker on a 30-day rolling average measured by continuous emission rate monitoring systems (CERMS). A wet scrubber will be used to control combustion gases from the system resulting in an emission reduction of 11,261 tons/year relative to the current emissions baseline.

- Nitrogen Oxide controls to achieve emission limit of 1.5 lb/ton of clinker, per 30-day rolling average. Emissions are controlled by using a low-NOx kiln burner and a low-NOx calciner that destroys kiln NOx. SNCR would also be applied to control NOx emissions for the new kiln system, resulting in emission reduction of 3,115 ton/year relative to current emissions baseline.
- Volatile Organic Compound controls to achieve emission limits of 254.4 tons of VOC/yr per rolling 12-month average using a continuous emission rate monitoring system (CERMS). The emission limits would be met through process operating controls.
- Mercury controls to achieve emission limit from the kiln system of 21 pounds per million ton clinker produced which is an annual limit of 59 pounds per year. The proposed control system is a wet scrubber, but the facility may employ BTA as yet developed to ensure compliance with regulations.

Fugitive Dust: As required under NYSDEC Rules and Regulations for the control of emissions from Portland Cement Plants (6 NYCRR Part 220), a Comprehensive Fugitive Dust Control Plan was developed for the Ravena Plant in 1993 (Blue Circle Cement, Inc., Ravena, New York, March 12, 1993), and later modified in “*Lafarge Ravena Plant Fugitive Dust Plan – 2006*”. Lafarge currently operates the Ravena Facility in accordance with a NYSDEC-approved Fugitive Dust Plan last revised in 2010 (*Lafarge Ravena Plant Fugitive Dust Plan, 2010 Revision*). The objective of the Fugitive Dust Plan is to devise a strategy to control, to the greatest extent practicable, fugitive or airborne dust emissions at the Ravena Facility. This is accomplished by development of measures to control fugitive dust and airborne dust emissions from all major potential sources at the Ravena Plant including fugitive dust and airborne dust emissions from:

- Material conveyors and transfer points, material storage piles, paved roads, unpaved roads, material loading, and material unloading activities at the cement manufacturing facility;
- Drilling, blasting, material loading, material unloading, and unpaved haul roads at the aggregate quarry;
- Operations at the cement kiln dust landfill;
- Conveyors and transfer points, material storage piles, unpaved roads, and material unloading activities at the facility wharf.

The Fugitive Dust Plan identifies control measures specific to each of these sources to limit fugitive emissions from each source. These fugitive dust measures are also incorporated into the fugitive dust plan mandated as part of the NYSDEC Mine Reclamation Permit for the Ravena Facility Quarry. Examples of the types of controls applied to reduce fugitive dust emissions include limiting drop distances, conveyor and belt maintenance, speed limits and truck washing, truck loading/loadout controls, quarry drilling controls, quarry blasting controls, pug mill systems. The approved Fugitive Dust Control Plan for the Ravena Plant is provided in Appendix O of the FEIS.

Lafarge has informed the Department that the existing Callanan processing operations are scheduled to be terminated at the Ravena site at the end of 2011. There will be no aggregate processing (crushing, screening or washing) by Callanan or any other entity during the construction period of the modernization project, thus eliminating the dust from their stone processing. The termination of Callanan aggregate processing operations will result in a substantial reduction in fugitive dust from the facility and air pollutant emissions from related truck traffic. According to the Annual Emission Certification filed for 2010 by Callanan, the reduction in actual emissions would be 13 tons per year of CO and 27.8 tons per year of PM₁₀ upon termination of Callanan operations. If any aggregate processing is proposed in the future, it will be subject to the Department's permitting process including public input. Therefore, the modernization project will not result in significant adverse impacts relating to fugitive dust.

In conclusion, the permit would meet all state and federal requirements and regulations by the modernization of the current manufacturing process and would include both operational or installation of pollution controls to meet the limits set in the permit. Also, compliance will be demonstrated through continuous emission monitoring systems for several pollutants. Additional permit conditions for particulate emission control to ensure compliance with air quality standards include:

- Particulate Monitoring - The permittee shall install and operate two PM₁₀/PM_{2.5} monitors for one year beginning upon initial start-up of the new kiln near the Ravena Plant site to demonstrate compliance with NAAQS. One monitor shall be installed and operated at the northwestern edge of the Ravena Plant site, and one shall be installed and operated at the Ravena-Coeymans-Selkirk High School. Monitoring shall begin upon initial start-up of the new kiln system, and continue for a period of at least one year.
- Enclose Raw Material Piles - The permittee shall enclose the limestone raw material pile as indicated on or in accordance with the facility plans and the graphic depiction of the proposed facility represented in the FEIS (see graphic depiction, and Appendix A Design Drawings: RVN 000 C902), August 2010 and the Air Title V application, Tab C submitted September 2010.

Based on the above assessments, facts, and conclusions, the Department has determined that the modernization will not result in significant impacts to air quality, and that the modernization will meet all the state and federal requirements, which ensure protection of public health and the environment.

Energy

The facility modernization to a dry manufacturing process will result in a more energy efficient operation reducing both the rates of electrical and fuel use per short ton of clinker produced. Fuel use will be reduced approximately 40% per short ton of clinker produced, and reduced by 3% overall when you account for the 61% increase in clinker production.

The incorporation of waste heat recovery technologies will meet approximately 17% of the plant's off-site electricity demand, and net electrical usage will be reduced by approximately 20% per short ton of clinker produced. However, electrical usage would increase by only 21% overall compared to the 61% increase in clinker production. The modernization will be more energy efficient compared with the existing facility, as summarized in the FEIS Table 17-1, *Summary of Energy Demand*. National Grid, the source of electricity at the Ravena Plant, has the capacity to meet the increase in demand for electricity

at the Ravenna Plant. Therefore, the project would not result in any significant adverse impacts related to energy use.

Socioeconomic

The Lafarge Modernization project will employ 800 workers during the construction period of the project, and retain the 180 employees currently employed at the facility. Therefore, the project would have a significant positive benefit on the regional economy during construction, and would have a long-term benefit on local economy by retaining the current local manufacturing workforce.

Greenhouse Gas Emissions

Carbon dioxide (CO₂) is a byproduct of cement production, and comes from both the burning of fossil fuels and from the process of converting the limestone to clinker. In addition smaller amounts of other greenhouse gases are emitted during the cement manufacturing process. In accordance with Department policy guidance “Assessing Energy Use and Greenhouse Gas Emissions in Environmental Impact Statements,” a greenhouse gas assessment was conducted to evaluate the impacts of the facility modernization. The assessment included an evaluation of both direct and indirect greenhouse gas emissions, as well as emissions from waste generation and disposal, emissions generate during construction including the manufacturing and transport of construction materials, and emissions associated with raw materials extraction. Direct emissions include emissions from on-site combustion sources and industrial processes, and from fleet vehicles at the facility. Indirect emissions include emissions from off-site sources that supply electricity for the proposed project, emissions from freight deliveries and transportation associated with workforce commuting.

A portion of the assessment considered the impacts of the project should future demand for cement be met by foreign imports from Latin America and Middle East sources. An analysis of the future condition without the modernization project and the future condition with the modernization resulted in an increase in greenhouse gases due to the emissions associated with an increase in fuel used for shipping. Meeting the demand for cement from foreign manufacturing would account for an increase in greenhouse gas emissions per ton of clinker produced from 0.96 short tons of CO_{2-e} per year in the future with the proposed modernization to 1.10 short tons of CO_{2-e} per year in the future without the proposed modernization.

A best available control technology (BACT) assessment to reduce GHG emission under the Clean Air Act has been completed and submitted to the Department on November 18, 2010 (see FEIS Appendix L *Greenhouse Gas Best Available Control Technology Analysis for Ravenna Plant Modernization Project*). Based on expulsion testing (heating kiln feed samples to process temperatures in a controlled environment to measure the gas emissions in order to estimate the types and quantities of pollutants for the full scale facility) and experience in designing and operating other cement plants around the world, Lafarge will be required to meet the CO₂ BACT limit specified in the Title V Air Quality permit by implementing controls to meet this limit. The BACT concluded that an emission limit be set at 0.95 tons CO_{2-e} per ton of clinker on a rolling 12 month average, which is 12% less than the existing plant.

The modernization of the facility incorporates several measures within its design that minimizes greenhouse gas emissions:

- The more energy efficient “dry” manufacturing process reduces overall fuel consumption by approximately 40% per ton of clinker produced and reduces electrical usage by approximately 20% per ton of clinker produced.
- The modernization incorporates a 6 megawatt (MW) waste heat recovery cogeneration unit that will supply a portion of the required electricity for the modernized plant. Waste heat from the preheater tower and clinker cooler will be recovered via steam boilers and returned to the power generating station.
- The raw mix for the modernized kiln will be able to use limestone that was previously chemically unsuitable for use as a raw material. Therefore, greenhouse gas emissions associated with limestone mining will decrease per ton of clinker produced.

Overall, approximately 2.7 million short tons of CO_{2-e} would be emitted annually with the proposed project to manufacture approximately 2.81 million short tons of clinker. This would be less than the approximately 3.1 million short tons of CO_{2-e} emissions that would be emitted in the future without the Proposed Action (modernization project) as imports would be needed to meet future demand. This is an increase over existing emissions of 1.9 million short tons of CO_{2-e} emissions for producing 1.72 million short tons of clinker per year, which is due to the need to increase production capacity by 61% in order to meet future demand. CO_{2-e} emissions per short ton of clinker manufactured would decrease from approximately 1.1 short tons under existing conditions to 0.96 short tons in future with the proposed action. The FEIS Table 21-12 *Summary of Greenhouse Gas Emissions* summarizes the greenhouse gas emission for the existing facility, emissions in the future without the modernization, and the emissions in the future with the modernization.

Based on the above assessments, facts, and conclusions, the Department has determined that the modernization will not result in significant impacts to greenhouse gas emissions. The project will result in a more efficient, larger cement manufacturing facility to meet future demand for cement while emitting fewer greenhouse gases per short ton of clinker manufactured compared with existing conditions and future conditions without the proposed project.

Surface Water Quality

The dry manufacturing process will use less water per ton of clinker produced than the current process and will be primarily supplied by quarry pump out water and groundwater, supplemented at times with water from the Hudson River. It is estimated that between 0.5 and 1.0 MGD can be supplied to the processing system from the quarry, and that groundwater supply wells can yield up to 1.0 MGD. The Hudson River can supply up to 2.0 MGD, but will be used only as needed to supplement or replace quarry and groundwater supplies when their availability is insufficient or limited by quality or quantity. A Best Technology Available (BTA) analysis (see FEIS, Appendix G) was required by the Department as part of the modification to the existing SPDES permit (issued August 30, 2010), and it addressed technologies and operational measures designed to minimize cooling water withdrawal impacts. Intake capacity will decrease from 8 MGD to 2 MGD, a 75% reduction. The reduction in river water usage compared to the current facility will be realized through the use of a closed-cycle cooling system and an increase in quarry and well water supply. As such, fisheries impacts due to the entrainment of fish eggs will be decreased. Further fisheries impacts will be decreased by the installation of wedge-wire screens which will reduce impingement leading to the mortality of young fish by an estimated additional 90% bringing the total estimated reduction in impingement to more than 97%.

Non-contact cooling water (NCCW) that is currently discharged to surface waters, will be replaced by a new closed-looped glycol cooling water system which would eliminate approximately 0.8 MGD of NCCW that is currently being discharged to surface waters. In addition, to eliminate the thermal discharges to Coeyman's Creek associated with the cooling tower blowdown, the blowdown will be recycled as makeup water for the proposed flue gas desulfurization (FGD) wet scrubber system. Based on these facility design systems, the modernized facility will have no cooling water thermal discharges to surface waters.

In addition to the elimination of cooling water discharges, the modernization also incorporates the complete recycle of all process wastewaters, which includes the flue gas wet scrubber blowdown and the waste heat recovery cogeneration unit's demineralization plant wastewater. The existing truck wash station will be converted to a recycled or air vacuum system to eliminate discharge to surface water.

A preliminary SWPPP has been prepared for the site and will be approved prior to construction (see FEIS, Appendix F, Preliminary Stormwater Pollution Prevention Plan). Stormwater outfalls are incorporated into the SPDES permit and will meet discharge limits set within the permit conditions.

The modernized facility will not result in any significant change to wastewater discharges, which are limited to excess quarry water, stormwater, treated sanitary effluent and CKD leachate. The Department, based on these facts and circumstances, finds that the impacts to surface water from the modernized facility are not significant.

Hudson River Water Withdrawals

Water withdrawals from the Hudson River will provide supplemental flow for cooling and process water needs and will be limited what is needed to supplement the primary sources of quarry water and groundwater. The design capacity of the pumps at the existing facility is 8 MGD, while the modernized facility will be designed for a capacity of 2 MGD, which is a 75% reduction in withdrawal capacity. The new facility will continue to use the existing intake structure to withdraw water only in the event that quarry and well water volume is insufficient. River water usage will be reduced compared to the current facility by using a closed-cycle cooling system and by increasing the quarry and well water supply. Therefore, the use of Hudson River water will be considerably less than the 2.6 MGD which is the average use for the existing Ravena Plant and would result in an estimated reduction in the rate of water withdrawal from the Hudson River of 90% as compared to current operations, with an associated decrease in fisheries impacts.

A Best Technology Available (BTA) analysis (see FEIS, Appendix G, BTA Report) was required by the Department as part of the modification to the existing SPDES permit (issued August 30, 2010), and it addressed technologies and operational measures designed to minimize cooling water withdrawal impacts. Wedge-wire screens with a slot-width of 0.5 mm will be installed at the intake structure to reduce fisheries impacts. Estimates of annual entrainment of aquatic organisms with the current facility and with the installation of wedge-wire screen are shown in Table 13-1 *Estimated Annual Entrainment Losses by Taxon and Life Stage at 2.0 MGD Hudson River Withdrawal Rate and Current Intake Configuration* and 13-2 *Estimated Annual Entrainment Losses by Taxon and Life Stage at 2.0 MGD Hudson River Withdrawal Rate with 0.5 mm Wedge-wire Screens Installed*, and include the following fish species: American Shad, Gizzard Shad, River Herring, White Perch, and others. As indicated in

Tables 13-1 and 13-2, more than a 90% reduction in entrainment losses due to the installation of wedge-wire screening is estimated.

Limiting the design capacity to 2 MGD represent a reduction of 75% in potential withdrawal volume, with an equivalent reduction in numbers of passive organisms exposed to entrainment. Installation of 0.5 mm wedge-wire screens is estimated to reduce losses by an additional 90%, bringing the total estimated reduction in impingement to more than 97%.

The modernization will minimize impacts to the Hudson River by using quarry water and well water as alternative sources and will:

- use Hudson River water ONLY when the other two sources of water are not adequate;
- Reduce the capacity of the intake structure to 2 MGD;
- Operate a wet closed-cycle cooling on the cogeneration plant and a glycol closed-cycle cooling system for the dry kiln manufacturing process;
- Install wedgewire screens on the Hudson River intake to reduce fisheries impacts.

Water withdrawals from the Hudson River would decrease with the modernized facility compared to the existing facility. The Department, based on these facts and circumstances, finds that the impacts to the Hudson River water from the modernized facility have been minimized and are not significant.

Visual Resources

The Lafarge Modernization project replaces the existing “wet” cement-making process with a more energy and fuel efficient “dry” cement-making process. This involves replacing two existing long “wet” kilns and 350 foot high exhaust stack, with a preheater/precalciner tower structure of no more than 526 feet in height. The tower/stack structure is a necessary component of the “dry” cement-making process, and is required to achieve the more energy and fuel efficient transfer of heat. In the “wet” process, water is evaporated from a “water-limestone slurry” (raw material mix) in a relatively inefficient heat transfer process. In the dry process, crushed limestone and raw materials are pre-heated from the exhaust heat from the kilns in a process that is more energy and fuel efficient (see Energy discussion), results in a reduction of most air pollutants, and is less costly in terms of production.

The existing facility is comprised of a number of structures that result in a characteristically industrial site, and the industrial nature of the site will continue with the modernization. Therefore, the visual impact assessment focused primarily on visual impacts from the 526-foot preheater/precalciner tower and other proposed facilities in comparison with existing visibility with the existing stack and other existing facilities.

A visual impact assessment (see FEIS Chapter 9) was conducted to determine whether there were any significant visual impacts from the preheater/precalciner tower on important visually sensitive resources, and included an assessment of the structure’s visibility from visually sensitive vantage points as well as an assessment of the vapor plume and nighttime lighting impacts. The visual impact assessment included an inventory of visually sensitive resources within a 25-mile radius of the project site; a computer analysis of whether the tower would be visible from the inventoried sites; field reconnaissance; detailed analysis through computer simulations of select sites; an evaluation of changes to the viewshed; determination of whether the changes would represent a significant adverse visual impact; and identification of mitigation options. In order to capture the greatest potential impacts, the

analysis was done for both daytime and nighttime and during periods when deciduous vegetation was without leaves.

Of over 400 identified visually sensitive resources within 25 miles of the project, 35 were determined to have line of sight views from the of the new tower. Field reconnaissance of the 35 resources deemed only 8 of the 35 sites provided a line of sight view due to intervening features, as well as additional locations along the Hudson River. Photographic simulations were completed for both daytime and nighttime views of the facility and for both the partially-enclosed tower/stack structure alternative and the visually-enhanced tower/stack structure alternative,

This assessment allows for the Department to conclude that the new tower will increase the visibility of the Lafarge facility only from limited areas including one spot along the Hudson River south of the Lafarge docks in the vicinity of Coeymans Landing, the adjacent Ravena Coeymans School, and the NYS Thruway. Schodack Island State Park which is part of the designated coastal resource Scenic Areas of Statewide Significance (SASS) does sit opposite the Hudson River site where the tower will be visible but the Park has no riverfront access point at that location.

Alternatives to the 526-foot tower/stack structure were specifically evaluated as part of the SEQR process with the goal of exploring reasonable options with the potential to meet the purpose and need to modernize the existing facility into a competitive, energy-efficient plant with reduced rates of pollution. Alternatives to the proposed tower/stack include alternative size and capacity of the facility; alternatives to the layout and orientation of the project site; alternative locations of the facility; and alternative design and technologies to the preheater/precalciner process to improve energy efficiency and decrease air pollutant emissions. It was concluded that alternative size and capacity, layout and orientation, facility location, design and technologies do not meet the purpose and need of the project with consideration of the evaluation criteria.

Alternatives to the cement manufacturing process that would result in a lower tower, were considered but not chosen because the preheater/precalciner process, which is substantially larger and more visible than the existing stack, is the most modern and energy-efficient of the three manufacturing processes currently in use in the United State today. This energy-efficient process results in the lowest fuel use and energy cost, thereby reducing the amount of greenhouse gas emissions and air pollutants emitted from the facility and also substantially contributing to its economic viability and sustainability. To achieve the energy efficiencies, the process requires a preheater/precalciner tower of increased height to allow for the heat of combustion to be used for the chemical changes necessary to combine the raw materials and produce Portland cement. The preheater/precalciner process is approximately 40-45 percent more energy-efficient per ton of clinker produced than the existing wet process, and 30 percent more energy-efficient than other facilities that use the alternative long dry kiln process. Therefore, the preheater/precalciner tower was deemed necessary and used as the basis for the visual analysis of the action.

In addition to the alternatives listed above, alternative tower designs have been evaluated to minimize the visual impacts, and other visual enhancements to the overall facility are being required to mitigate the industrial character of the site. Alternative designs to the tower structure that were evaluated included a partially-enclosed tower/stack; a substantially-enclosed tower/stack; a visually-enhanced, partially-enclosed tower/stack including alternative materials and enhanced nighttime lighting. An

evaluation of the alternatives considered costs, maintenance requirements, access, function (e.g., transfer and dissipation of elevated temperatures), safety, and overall visual aesthetic. The partially-enclosed tower/stack structure was chosen based on the evaluation that the structure would enhance the visual character, would require the least degree of maintenance, would allow for unobstructed access to the structure, would have the least potential to result in elevated temperatures at worker locations, and would be the most cost effective.

Visual mitigation to minimize the overall enhanced presence of the facility resulting from the new preheater/precalciner tower include:

- design elements including a visually cleaner, semi-enclosed structure, materials, light colors with vertical elements, and finishes that help minimize the tower's industrial character;
- lighting that will be shielded and directed downward to minimize nighttime impacts;
- lighting that will be used on an as needed basis to the extent practicable to minimize nighttime lighting;
- a landscaping plan that will require plantings and other visual barriers to enhance the overall aesthetic of the facility;
- the removal of the existing stack to reduce the overall visual presence of the facility;
- and facility operating parameters that will limit plume formation (it will be mainly water vapor) to lower temperature days and therefore be less visible from the Hudson River during high recreational use days occurring more often in warm weather.

The preferred design minimizes visual impacts and incorporates design elements to mitigate to the maximum extent practicable. The existing stack and facility are visible within the surrounding landscape, and while the new facility will be higher and larger as required for the new energy efficient and less polluting technologies, design elements have been incorporated into the structure to minimize and to mitigate the visual impact.

After weighing and balancing relevant environmental impacts with social, economic and other considerations that define the need for this project from among the reasonable alternatives, this project is one that based upon this balance will avoid or minimize/mitigate the visual impacts from the modernization project. Specifically, the element with the most visual change from the existing facility - the preheater/precalciner tower - will be minimized and mitigated to the maximum extent practicable by the PET/SS tower design and lighting modifications described above and projected plume formation mainly during lower temperatures. Facility landscaping will further mitigate industrial aspects of the site as a whole, and a visual offset for the tower will be required by removing the existing stack from the landscape.

Natural Resources

A natural resource assessment was completed to evaluate the potential impacts of construction and operation of the modernization on natural resources. The assessment included an evaluation of effects on terrestrial and avian species including threatened and endangered species and species of special concern, and in particular, a study to evaluate the potential for bird strikes on the larger tower structure.

The Lafarge project will be located entirely within the boundaries of the existing Ravena Plant and the portion of the Lafarge property that is currently in use as an aggregate processing and storage facility by

Callanan Industries. Construction of the modernized facility will take place primarily within those portions of the project site that are already developed, with the exception of 0.9 acres of clearing within an area of successional northern hardwood. The permanent loss of this habitat will not have a significant impact on threatened and endangered species because the potential for these species to occur within the project site is unlikely (see FEIS Table 10-5 *Endangered, Threatened, and Special Concern Species that Could Occur On or Adjacent to the Project Site*). The impacts on the existing wildlife within the newly cleared area are not significant because the clearing of the land would result in the loss of less than one acre of natural habitat, and represents a small fraction of similarly available habitat within the project site (19.2 acres) and surrounding undeveloped areas.

The potential for significant impacts to bird and bat populations due to an increase in tower strikes was assessed. The Ravena Plant is located along the Hudson River corridor which is a known avian migratory flyway, and the construction of the new tower/stack structure has the potential to increase the number of bird fatalities associated with collisions with the new structure. As part of the natural resource assessment, on-the-ground survey work of the area around the existing tower was required during the spring migration season (May 20, 2010 to June 14, 2010) to document existing bird strike fatalities. Reconnaissance work did not result in the documentation of any bird fatalities associated with the existing stack or other structures at the project site. Radar studies did document that during a segment of the migratory season and under certain weather conditions some birds will be migrating at the same location and elevations as the proposed tower.

Since the new tower structure is taller and bulkier than the existing stack, the modernization could have the potential to cause bird strikes and associated fatalities. Potential impacts to birds from tower strikes will be minimized by design elements, lighting modifications, and stack removal. The tower design incorporates features conforming to United States Fish and Wildlife's *Interim Guidelines for Recommendations on Communication Tower Siting, Construction, Operation, and Decommissioning*, which includes the recommendation to remove the existing stack at the site in order to eliminate the potential for bird/bat strikes at that location. While it is a smaller structure and its removal is primarily for visual reasons, this action would reduce total tall structures in the area by one and may help to reduce the chances for potential bird strikes as the birds have one less tall structure around which to navigate. The tower structure does not include windows or other reflective surfaces, and does not require the use of guy wires, both of which are known to increase the potential for bird strikes.

In order to monitor the effectiveness of the impact mitigation measures in reducing potential impacts to birds and bats from the new tower, a permit condition requires development and adherence to a protocol for monitoring potential bird and bat strikes on the preheater/precalciner tower during the first spring and fall migration period following construction of the tower. The protocol will provide for an evaluation as necessary recommendations to address any unanticipated impacts.

The Department, based on these facts and circumstances, finds that the impacts to birds and bats from a potential increase in tower strikes will be minimized to the extent practicable through the use of design elements, lighting modifications, and stack removal. In addition, the permit contains a condition that requires the development of a protocol for monitoring potential bird and bat strikes on the preheater/precalciner tower during the first spring and fall migration period following construction. This will provide an assessment if such strikes will occur on the tower and will recommend follow-up measures as necessary including ways to reduce mortality to the maximum extent practicable. Likewise,

impacts to the existing wildlife within the newly cleared area will not be significant as the clearing of the land represents a small fraction of similarly available habitat within the project site and surrounding undeveloped areas.

Land Use

The Lafarge Modernization project will be a continuation of the existing land use on the project site which is within an existing industrial zone. Therefore, the project would not result in any significant impacts to land use.

Environmental Justice

No potential environmental justice areas have been identified within a 5-mile radius of the project site. No disproportionate adverse environmental impacts have been identified to occur in minority or low-income communities as defined by the Environmental Justice Policy. Therefore, the project will not result in any significant impacts to Environmental Justice communities.

Community Facilities

The Lafarge Modernization project will not increase demand for police, fire, educational, or other local services, and will not displace any community facility. Therefore, the project would not result in a significant impact to community facilities.

Open Space

The Lafarge Modernization project will be constructed entirely on the existing, industrial facility site and will not encroach upon any existing parks or recreational areas. The project will not impede the use of any public parklands, recreational areas or open space in the surrounding region. Therefore, the project would not result in a significant impact to Open Space.

Cultural Resources

The Lafarge Modernization project will be constructed entirely on the existing, industrial, previously disturbed site which has little or no potential for the presence of archaeological resources. In addition, it will not involve the alteration of any significant historic resources. Therefore, the project would not result in a significant impact to cultural resources.

Hazardous Materials

All construction activities would be completed in accordance with a Health and Safety Plan which would include procedures for the safe handling, treating and disposing of site soils and groundwater from dewatering, should any contamination be encountered. Therefore, the project would not result in significant impacts relating to hazardous materials.

Groundwater Resources

Groundwater wells will supply approximately 1.0 MGD of the process-related groundwater needs for the modernized facility. A hydrogeologic report (see FEIS, Appendix H, Groundwater Well Report) was completed to determine the adequacy of groundwater supply and tests concluded that the three pumping wells were capable of producing over 1.33 MGD and that the recharge to the aquifer was likely greater than the rate of discharge. Therefore, the project would not result in significant impacts to groundwater resources.

Infrastructure

The number of permanent employees (180) at the Ravena Plant will remain the same with the proposed project and the 5,000 gpd demand for potable water will remain the same as with the existing facility. Likewise, treatment of sanitary waste will remain unchanged. Therefore, the project will not result in a significant impact to the public water supply or public sanitary wastewater treatment or other public infrastructure. Sufficient facilities will be provided for the 800 temporary construction employees.

Solid Waste

The Lafarge modernization will not result in increases in solid waste at the facility. Cement Kiln Dust (CKD) and kiln refractory volumes are expected to decrease as a result of the new facility, while the volume of baghouse filters will increase. Other wastes associated with the operation of the facility will remain unchanged.

The volume of used baghouse filters will increase by 25% as a result of the modernized facility, from 2 tons per year currently, to 2.5 tons per year with the modernization.

The volume of both cement kiln dust (CKD) and Kiln Refractory will decrease significantly as a result of the modernization. CKD waste requiring disposal on-site or offsite use will be reduced from 143,500 tons per year, to less than 86,000 tons per year with the installation of an “alkali-bypass” which would have its own baghouse control system and is designed to remove a percentage of the kiln gas stream so that the higher alkali containing dust can be removed and not affect the quality of the clinker material. If the final mix of raw materials results in no need for the alkali bypass then 100% of the CKD can be returned into the process thereby eliminating the need for CKD disposal. CKD which cannot be used in the clinker process will be recycled for off-site use via an approved Beneficial Use Determination from the Department and any unrecycled amount placed, as is current practice, into an onsite landfill that meets all 6NYCRR360 regulatory standards thereby protecting groundwater. Kiln refractory waste will decrease approximately 50% from 2,500 tons per year to 1,250 tons per year with the modernization project.

The Lafarge Modernization project will result in a significant decrease in the amount of solid waste disposed at the on-site landfill, and other waste impacts will remain unchanged including assuring protection of groundwater via an onsite landfill compliant with 6NYCRR360 standards.

Traffic and Safety

During the operational phase of the modernized project, employee trips will not change from the current condition because there will be no increase in employees and therefore no additional employee trips. Due to the increase in production and associated increases in raw materials needed and cement produced at the site per year, an increase of six to seven site-generated truck trips during the AM and PM peak hours was determined. Table 19-7 *Level of Service: Future with the Proposed Action Conditions* of the FEIS indicates the specific capacity analysis, which shows that all intersections will maintain existing levels of service (LOS), with the exception of the Ravena Plant North Entrance/Exit and Route 9W (Westbound LR). However, this intersection will only increase in delay from 14.8 seconds to 15.3 seconds, which accounts for the LOS decreasing from B to C. All intersections will continue to operate at acceptable levels of service according to the capacity analysis as shown in Table 19-7 of the FEIS.

Therefore, the Department finds that there will be no substantial change in traffic, traffic patterns or safety, and there will be no significant adverse impacts to traffic or safety during the operational phase of the project.

During the construction period, there will be an increase in traffic in the immediate area of the facility to accommodate the increase in employee workforce at the plant. Heavy equipment and delivery trucks at the construction site will increase during peak construction periods as well. The traffic assessment (FEIS, Appendix I, Traffic Impact Study) indicated that increases in traffic during construction will not have significant adverse traffic or safety impacts. However, in order to alleviate increased traffic in the immediate area of the facility, the plant will minimize impacts by:

- Operating a shuttle bus to transport construction workers from designated remote off-site parking locations to the work site;
- Developing a maintenance and protection of traffic (MPT) plan which includes driving instruction for project deliveries, a parking strategy for construction workers and a communication s plan for the school district and the Town of Coeymans;
- Incorporating truck delivery instructions into the contracts of vendors, and limiting deliveries to non-peak hours to the extent practical.

The Department, based on these facts and circumstances, finds that the temporary impacts to traffic and safety during construction will not result in a significant impact, and furthermore, that minor impacts from the increase in traffic during construction in the immediate area of the facility will be minimized to the extent practicable.

Noise

A quantitative noise assessment was completed to determine whether the modernization would have a significant impact to noise levels (See FEIS, Appendix L, Noise Assessment). The detailed noise assessment considered eight noise-sensitive receptors closest to the facility and most affected by the project including Ravena-Coeymans-Selkirk Middle/High School on Route 9W, Residences on Route 9W near the project site, and residences located on Old Ravena Road (east of Route 9W) near the project site. The analysis included an estimate of noise conditions that would occur at these noise-sensitive receptors due to the modernization project, and the results of this analysis indicated that the total increase in noise levels due to construction will range between 1 and 3 dBA (see FEIS Table 22-19 *NYSDEC Program Policy Noise Assessment – Combined Analysis Predicted Total Construction Related Noise Levels at Nearest Noise-Sensitive Receptors during the First Construction Shift*) at the residential noise-sensitive receptors located along Route 9W and the Ravena-Coeymans-Selkirk Middle/High School during the peak facility hours. The analysis also included an estimate of noise conditions that would occur during operation of the modernized plant at peak facility hours and determined that noise levels would increase between 1 and 3 dBA (see FEIS Table 22-20 *NYSDEC Program Policy Noise Assessment – Combined Analysis Predicted Total Operation Related Noise Levels at Nearest Noise-Sensitive Receptors during Peak Facility Hours*). An increase in noise levels of 3 dBA is barely perceptible to the human ear and, according to the NYSDEC Policy Assessing and Mitigating Noise Impacts, increases ranging from 0-3 dB should have no appreciable effect on receptors.

As stated in Section 22.6.5 of the FEIS (page 22-23), additional noise monitoring was performed east of the Hudson River, across from the existing Lafarge barge operations, to determine if on-site Ravena Plant operations affect noise levels east of the Hudson River. The barge loading operations are the

closest on-site Ravena Plant operations to locations east of the Hudson River. Noise monitoring was performed when Lafarge barge loading operations were occurring (63.4 dBA), and when Lafarge barge loading operations were not occurring (64.8 dBA). A review of the noise monitoring measurements indicates that there is no significant difference between noise levels on the east side of the Hudson River between periods when barge loading was occurring and not occurring.

As covered in the NYSDEC Policy Assessing and Mitigating Noise Impacts, several abatement techniques will be used to minimize noise impacts including: replacing back-up beepers with strobe lights; modifying machinery by using plastic liners, flexible noise control covers, and dampening plates; restricting delivery schedules to weekdays and during daytime hours as much as practicable; choosing quieter equipment options; considering arrangement and placement of noisier equipment to shield it from receptors; limiting truck and equipment idling; and ensuring equipment maintenance and quality mufflers.

Based on the above assessments, facts, and conclusions, the Department has determined that the modernization will not result in significant noise impacts during construction or operation, and that the modernization will meet the standards in 6NYCRR Part 360, and the guidance within NYSDEC Policy Assessing and Mitigating Noise Impacts.

Public Health

The facility modernization will result in the reduction in the rates of most air pollutant emissions and will reduce air quality impacts. The modernized facility includes air pollution control measures for particulate matter, sulfur dioxide, nitrogen oxides, volatile organic compounds, mercury, and carbon monoxide to assure compliance with all EPA and DEC emission limits. The modernization will comply with all state and federal regulations and requirements, including the recently promulgated more stringent emission standards and requirements for mercury, SO₂, and NO_x, and particulate matter. The proposed project will conform to all state and federal regulatory requirements and limits, which are protective of human health, and therefore the modernization would have no significant adverse impact on Public Health

Public/Adjudicatory Hearing/Regulatory Standards

Under the provisions of 6 NYCRR 621.8(b) no substantive or significant issues have been raised warranting an adjudicatory public hearing and all statutory and regulatory criteria and standards for approval and permit issuance have been met.

Certification to Approve:

1. Having considered the draft and final Environmental Impact Statement and having considered the preceding written facts and conclusions relied on to meet the requirements of 6 NYCRR Part 617.11, this Statement of Findings certifies that the requirements of State Environmental Quality Review (6 NYCRR Part 617) have been met;
2. The requirements of Air Title V (6 NYCRR Part 201) and State Pollutant Discharge Elimination System (6 NYCRR PART 750) have been met;
3. The impacts of the Lafarge Modernization Project have been fully examined. After weighing and balancing relevant environmental impacts with social, economic and other considerations that define the need for this project among the reasonable alternatives available, this action avoids or minimizes adverse environmental impacts to the maximum extent practicable by design alternatives and by incorporating permit conditions.

William J. Clarke

William J. Clarke

Regional Permit Administrator

NYS Department of Environmental Conservation

Region 4

7/19/2011

Date